IN THE CLAIMS

1-20. (Cancelled)

21. (Previously Presented) A system for transmitting data at a data rate of at least 10 gigabits per second by preferentially launching input power into a large core multimode fiber optic cable (LCMFOC) to increase a length/data rate product of the LCMFOC, the system comprising:

a light source for transmitting data from a source as a first light signal, wherein the first light signal comprises a sequence of short light pulses at a data rate of at least 10 gigabytes per second;

a lens having a focal length (f), placed in a path of said first light signal at a distance of approximately said focal length (f) from an end of said LCMFOC, wherein the lens is located to receive said first light signal from said light source and to collimate and focus said short light pulses onto the end of the LCMFOC such that a diameter of focused short light pulses is approximately equal to a core diameter of the LCMFOC to excite low fiber modes and minimize excitation of higher order fiber modes in the LCMFOC,

wherein the LCMFOC is designed to decrease higher order fiber modes which increase pulse spreading that limit the length/data rate product and to thereby increase a transmission distance through the LCMFOC and output second light pulses which include substantially only lower order fiber modes, wherein the LCMFOC comprises:

an exposed core having the core diameter which receives the focused short light pulses; and

a selected doped cladding layer around said exposed core which is selected to excite low order fiber modes of the LCMFOC as said focused short light pulses propagate down the LCMFOC and to absorptively attenuate higher order fiber modes generated in said LCMFOC as said focused short light pulses

propagate down the LCMFOC, such that: said focused short light pulses propagate through the LCMFOC with reduced short pulse spreading effects that limit a length/data rate product of said LCMFOC.

22. (Previously Presented) The system for high speed data transmission as recited in claim 21, wherein said lens collimates said first light signal to reduce an excitation of higher order modes generated in said LCMFOC.

23. (Previously Presented) The system as recited in claim 21, wherein said first light signal has a wavelength greater than 750 nanometers.

24. (Previously Presented) The system as recited in claim 21, wherein a signal level from said light source is launched to said selected LCMFOC at 20dBM or more.

25. (Previously Presented) The system as recited in claim 21 further including:

a receiver coupled to an opposing end of said LCMFOC for receiving said second light pulses.

26. (Previously Presented) A method for transmitting data over a large core multimode fiber optic cable (LCMFOC) at a data rate of at least 10 gigabits per second, the method comprising the steps of:

providing a selected large core multimode fiber optic cable (LCMFOC), wherein the selected LCMFOC comprises: a doped cladding layer around an exposed core having a core diameter, wherein the doped cladding layer is selected to excite low order fiber modes of the selected LCMFOC and to absorptively attenuate higher order fiber modes of the selected LCMFOC which contribute to pulse spreading to increase a transmission distance through the selected LCMFOC; and

providing a source of short light pulses;

providing a lens of a focal length (f);

placing said lens in a path of between the source and the selected LCMFOC at a distance of approximately the focal length (f) from the source; and

transmitting data from said source as a sequence of short light pulses at a data rate of at least 10 gigabytes per second;

focusing the sequence of short light pulses with said lens to collimate and focus said short light pulses onto an end of the exposed core of the selected LCMFOC such that a diameter of focused short light pulses is approximately equal to the core diameter to produce a focused sequence of short light pulses to preferentially launch input power into said selected LCMFOC to excite low fiber modes and minimize excitation of higher order fiber modes in the selected LCMFOC to increase a length/data rate product of said selected LCMFOC,

wherein the doped cladding layer:

excites low order fiber modes as said focused short light pulses propagate down the selected LCMFOC; and

attenuates higher order fiber modes as said focused short light pulses propagate down the selected LCMFOC so that said focused short light pulses propagate through the selected

LCMFOC with reduced short pulse spreading effects that limit the length/data rate product of said selected LCMFOC, such that second light pulses output by said selected LCMFOC include substantially only lower order modes.

27. (Previously Presented) The method as recited in claim 26, wherein the core diameter is greater than or equal to 50 microns.

28. (Previously Presented) The method as recited in claim 26, wherein said selected LCMFOC comprises: a selected step index LCMFOC.

29. (Previously Presented) The method as recited in claim 26, wherein said first light signal has a wavelength greater than 750 nanometers.

30. (Previously Presented) The method as recited in claim 26, wherein a signal level from said light source is launched to said selected LCMFOC at 20dBM or more.

Please add the following new claims 31-37:

31. (New) A communication system for high speed data transmission comprising:

a light source for transmitting data as a first light signal;

a lens having a focal length f for receiving said first light signal from said light source, said lens being approximately said focal length f from said exposed core of said large core multimode fiber optic cable,

a large core multimode fiber optic cable, comprising:

an exposed core having a core diameter, wherein a refractive index of said exposed core is substantially real to propagate said light signal with low loss, wherein a second light signal received from said lens at the exposed core is focused on and has a diameter approximately equal to said core diameter to reduce excitation of higher order modes; and

a doped cladding layer around said exposed core of said large core multimode fiber optic cable that attenuates higher order modes generated in said large core multimode fiber optic cable to reduce pulse spreading effects that limit a length/data rate product, and

wherein said refractive index of said doped cladding layer includes a complex component that attenuates higher order modes such that a third light signal output by said large core multimode fiber optic cable includes substantially only lower order modes.

32. (New) The system recited in claim 31 wherein said lens collimates said light signal to reduce an excitation of higher order modes generated in said large core multimode fiber optic cable.

33. (New) A method for increasing a length/data rate product for a large core multimode step index fiber optic cable comprising a doped cladding layer around an exposed core of said large core multimode fiber optic cable, wherein the exposed core has a core diameter and wherein the doped cladding layer absorptively attenuates of higher order modes, the method comprising the steps of:

providing a data transmission comprising a sequence of light pulses;

focusing said light pulses onto an exposed end of a core of the large core step index multimode fiber optic cable such that a diameter of a light pulse is approximately equal to the core diameter to minimize excitation of higher order modes in the large core multimode step index fiber optic cable; and

using the doped cladding layer to attenuate higher order modes of said light pulses as said data transmission propagates down the large core multimode step index fiber optic cable to reduce pulse spreading effects that limit a length/data rate product such that second light pulses output by said large core multimode step index fiber optic cable includes substantially only lower order modes.

34. (New) A communication system for high speed data transmission, comprising:

a light source for transmitting data; and

a lens having a focal length f for receiving light from said light source; and

a large core multimode fiber optic cable comprising a core and a doped cladding layer around said core, wherein said lens being approximately said focal length f from an exposed core of said large core multimode fiber optic cable, and wherein a light signal from said lens is focused on and has a diameter approximately equal to a core diameter of said large core multimode fiber optic cable to reduce excitation of higher order modes, and wherein said doped

cladding layer is designed to absorb higher order modes to reduce pulse spreading effects that limit said length/data rate product.

35. (New) The system as recited in claim 34 wherein said lens collimates said light signal to reduce an excitation of higher order modes generated in said large core multimode fiber optic cable.

36. (New) The system as recited in claim 34, wherein a signal level from said light source is launched to said large core multimode fiber optic cable at greater than 20dBM, and wherein said light source provides light having a wave length greater than 750 nanometers and transmits data at greater than 10 gigabits per second.

37. (New) The system as recited in claim 34, wherein a refractive index of said core is substantially real to propagate said light signal with low loss and wherein said refractive index of said doped cladding layer includes a complex component that attenuates higher order modes generated in said large core multimode fiber optic cable.